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BOB MARTIN
Commissioner

July 19, 2017

Ricardito Vargas, Physical Scientist
Hazardous Waste Programs Branch,
Clean Air and Sustainability Division
USEPA Region 2
290 Broadway, 22nd Floor
New York, NY 10007

Re: Chevron's Updated Leak Detection Monitoring Program (LDMP) and Updated Leachate and Ground Water Monitoring Plan (LGMP) for CAMU Cells 1 through 3, June 9, 2017
Chevron USA, Inc.
Perth Amboy, Middlesex County, New Jersey
SRP PI# 003621

Dear Mr. Vargas,

The New Jersey Department of Environmental Protection (Department, NJDEP) has completed review of Chevron's plan, which was submitted pursuant to the Resource Conservation and Recovery Act (RCRA), Hazardous and Solid Waste Amendments (HSWA) Permit of 2013, and the Technical Requirements for Site Remediation at N.J.A.C. 7:26E (TRSR).

The Department approves the overall Updated *Leak Detection Monitoring Program and Updated Leachate and Ground Water Monitoring Plan for CAMU Cells 1 through 3* including sampling locations, sampling frequency and sampling parameters. The sampling programs can be implemented.

However, the Department has concerns related to documentation of well construction, sampling implementation, and data discussion in this report. Chevron needs to address the comments below in a response to comment document and a revised *Updated Leak Detection Monitoring Program (LDMP) and Updated Leachate and Ground Water Monitoring Plan (LGMP) for CAMU Cells 1 through 3.*

1. Ground Water Field Parameters: Ground water elevation, pH, specific conductance, temperature and turbidity are identified as Field Parameters.
   - Dissolved oxygen (DO), oxidation-reduction potential (ORP) and salinity are included in field stabilization monitoring and must continue to be included in low flow sampling documentation.
   - Report and discuss field sampling observations of odors, sheens, measurable LNAPL, etc. at any monitoring location (ground water elevation location, statistical analysis location, additional monitoring location, etc).

2. NF-2 LNAPL/AOC 44 ISCO: In 2014, remedial actions were performed south of CAMU Cell 1 and Cell 2 as part of the NF-2 LNAPL/AOC 44 ISCO ground water remediation. LNAPL continues to be

measured at MW-339 located at the edge of CAMU Cell 1 (0.36 and 0.48' LNAPL measured during the 2016 well gauging events included with the document; 0.59', 0.54' and 0.78' reported in the 1st Quarter Progress Report 2017). MW-339 is monitored weekly as part of the NF-2 LNAPL stabilization area with LNAPL recovery by absorbent sock and bailer. Benzene is reported at MW-233 and MW-234R (Attachment A CD: Cell 1 operations ground water data summary tables). Attachment C: CAMU Statistical Evaluation of Background GW Quality discussion states that changes in water quality due to ISCO implementation (which was in 2014) are expected to stabilize and will be evaluated in the proposed annual recalculation of UPLs.

- The recalculation of UPLs needs to summarize the remedial actions implemented to remediate LNAPL, benzene, arsenic impacts. Since 2014 ISCO implementation, clarify if there are any other plans to enhance LNAPL recovery at MW-339 and implement additional remedial actions based on continued benzene concentrations exceeding 100 ug/L.

3. Field Sampling Observations: The field sampling data sheets identify sheens, LNAPL and effervescence at MW-233, and petroleum odors (MW-233, MW-234R, MW-211, MW-322, MW-334R, MW-402 and MW-474).
   - Field sampling observations need to be part of the data discussion.

4. Well Abandonments: With construction of Cell 2, MW-211 and MW-333 were abandoned.
   - Please provide well abandonment documentation.
   - For MW-333, please clarify if the stuck pump was recovered prior to abandonment.

5. MW-315 and MW-234R:
   - Field sampling summary sheets were provided for MW-234R, but the field sampling stabilization data was not provided in the Low Flow Data Summary Table pdf.
   - Information on well construction, abandonment or sampling was not provided for MW-315. Please clarify its inclusion in Table A-1.

6. MW-322 and MW-323:
   - Table A-1 needs to be modified to include the current (February 2017) top of inner casing and ground surface survey data. The flush mount wells appear to have been converted to casing stickups.

7. Well Modifications: Modifications are reflected by updated well survey data provided with well construction documentation and changes in total depth reported on some Field Sampling Data Sheets.
   - Table A-1 and the Field Sampling Data Sheets must identify the current screen interval of the well from the top of the inner casing. Both locations only reflect the screen interval relative to ground surface. This is identified to ensure that the low-flow pump intake depth from TOC is within the screen interval of the well.

     Please review original information (well diagram, Form A construction summary, well survey) to resolve any discrepancies (e.g., casing stickup not reflected on Form A), and then factor in any well modifications (casing cut, casing extended) and survey data to identify the current screen interval (TOC).

8. Low flow Sampling Pump Intakes: Pump intake depths cannot be within the well casing, and should not be too close to the bottom of casing/top of screen to ensure that the stabilization parameter readings reflect the aquifer, not a mixture of casing water and the aquifer. Based on well construction information and the field sampling data sheet depth of the pump intake, the following locations are of concern:

   - MW-233: The total depth of the well is 9.7' TOC (field sampling sheet). The 5-foot screen appears to be set slightly deeper (4.7'-9.7' TOC) then documented. The pump intake was 4' TOC (July 2016) to 5 or 5.5' TOC (other sampling events). The 4' pump intake is within the casing and should not be repeated. The other pump intake depths are close to the top of screen, but since the typical depth to water measurements (around 2' DTW) reflect an elevation that is above the ground surface elevation (8.7' msl), the 5 and 5.5' pump intake depths may reflect aquifer water quality. There seems to be upward pressure from the aquifer unit, and there is typically little drawdown during purge. A pump intake depth shallower than 5.5' TOC is not recommended.
   - MW-323: The pump intake was 41' TOC January 2017. This was after well modification to a casing stickup (2017 and 2012 ground surface elevations are similar). The pump intake depth was at the top of the screen now 41 to 46 feet TOC. The pump intake for future sampling should be about 2.5' below top of screen (43.5' TOC).
   - MW-327: The pump intake at 20' TOC is within the casing and above the top of screen during all sampling events. The screen interval is about 21 to 26' TOC. The pump intake should be deeper, about 2.5' below top of screen (23.5' TOC).
   - MW-328: Confirm total depth. Well construction indicates the screen was set 23-28' bgs, 25.28-30.28' TOC (2.28' surveyed casing stickup). There may be screen interval loss to silt as total depth is recorded as 28.61' TOC. A pump intake at 25' TOC is just within the casing. The pump intake should be deeper, about 2.5 below top of screen (27.75' TOC). Evaluate redevelopment of the well.
   - MW-474: The screen interval is about 5.25 to 13.25' TOC. The pump intake at 5.5 and 6' below top of casing may be too close to the top of screen. The pump was located at 8' from top of casing in the January 2017 sampling event.

9. VOC and SVOC TICs: The ground water data summary tables did not include TIC information.

10. Leachate: Two leachate sumps per cell are constructed with sampling ports. One sample from each sump in a cell will be combined for one sample analysis. Leachate sample results were provided for Cell 1 operations.
    - Clarify if TICs are to be included in leachate sample analysis.
    - Clarify if the sample port collection method and combining of each sump sample into 1 sample for analysis is conservative for VOCs.
    - stabilization data was not provided in the Low Flow Data Summary Table pdf.

If you have any questions, please contact me at 609-292-3007.

Sincerely,

Anne Pavelka

Anne Pavelka PG, CHMM
Case Manager
Bureau of Case Management

C: Jill Monroe, BGWPA
John Boyer, BEERA
Bob Mancini, Chevron